WHAT IS CLAIMED IS:

1. A silicon nitride member comprising a substrate formed by sintering a silicon nitride material, and a hard film formed on a surface of said substrate, said silicon nitride member characterized in that:

when the strength of said substrate measured before said substrate is coated with said hard film is taken as 100%, the strength of said silicon nitride member measured after said substrate is coated with said hard film is 70% to 95%.

2. The silicon nitride member as claimed in claim 1, wherein a change in weight of said substrate associated with sintering is 1.5% to 3.5% by weight.

3. A silicon nitride member comprising a substrate formed by sintering of a silicon nitride material, and a hard film formed on a surface of said substrate, said silicon nitride member characterized in that:

when the amount of a grain boundary phase as measured at a central portion of said substrate is taken as 100% by volume, at least one of the following conditions (1) to (5) is satisfied:

(1) the amount of a grain boundary phase as measured in the vicinity of a depth of 100 μm from the surface of said substrate is less than 30% by volume;

(2) the amount of a grain boundary phase as measured in the vicinity of a depth of 200 μm from the surface of said substrate is 30% to 50% by volume;

(3) the amount of a grain boundary phase as measured in the vicinity of a depth of 300 μm from the surface of said substrate is 50% to 70% by volume;

(4) the amount of a grain boundary phase as measured in the vicinity of a depth of 400 μm from the surface of said substrate is 70% to 85% by volume; and

(5) the amount of a grain boundary phase as measured in the vicinity of a depth of 500 μm from the surface of said substrate is 85% to 100% by volume.

4. The silicon nitride member as claimed in claim 3, wherein a change in weight of said substrate associated with sintering is 1.5% to 3.5% by weight.

5. A method, for manufacturing a silicon nitride member as claimed in claim 1, which comprises:

adjusting a condition employed in sintering said substrate such that a change in weight of the substrate associated with sintering is 1.5% to 3.5% by weight.

6. A method, for manufacturing a silicon nitride member as claimed in claim 3, which comprises:

adjusting a condition employed in sintering said substrate such that a change in weight of the substrate associated with sintering is 1.5% to 3.5% by weight.

7. The method as claimed in claim 5 for manufacturing a silicon nitride member, comprising the steps of:

heating the substrate at a temperature in a range of from 1800°C to 1900°C for 60 to 180 minutes in a nitrogen atmosphere pressurized at from 2 to 6 atmospheres; subsequently lowering the temperature to a range of 1550°C to 1650°C; and maintaining the substrate at a reduced temperature for 60 to 180 minutes under a reduced pressure not higher than 13 kPa.

8. A cutting tool formed of a silicon nitride member as claimed in claim 1.

9. A cutting tool formed of a silicon nitride member as claimed in claim 3.